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How to Use the Index

In the Subject Index, pages 1679–1685, each technical paper is listed under a maximum of three appropriate headings. Note the number in boldface type following each paper title, and use that number to locate the paper in the Chronological Index. The Author Index, pages 1686–1687, lists all authors associated with a given technical paper. The locating numbers are identical to those in the Subject Index. The Chronological Index, pages 1688–1694, lists all papers by their unique code numbers. This listing contains titles, authors and their affiliations, and volume, issue number, and page where the paper appeared. It also gives the AIAA paper number, if any, on which the article was based, as well as the ISBN number if the paper was published in a bound collection of meetings papers. Comments, Replies, and Errata are listed directly beneath the paper to which they refer. If the paper to which they refer was published prior to 1999, that paper also will appear in the Chronological Index. Authors of Comments also are listed in the Author Index. The Book Review Index, page 1694, lists the books reviewed during 1999, the author, publisher, and reviewer, and the volume, issue number, and page on which the review appeared.

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Books Reviewed During 1999

Structural Integrity & Durability, by Satya N. Atluri, *Tech Science Press* (37, 1, p. 144); reviewed by John W. Lincoln.

Adaptive Structures: Dynamics and Control, by R. L. Clark, W. R. Saunders, and G. P. Gibbs, *Wiley* (37, 2, p. 288); reviewed by John L. Junkins.

EUROSHOCK—Drag Reduction by Passive Shock Control, by E. Stanewsky, J. Délery, J. Fulker, and W. Geißler, *Verlag Vieweg* (37, 3, p. 406); reviewed by Peter M. Hartwich.

Nonlinear Dynamics and Chaotic Phenomena, by Bhisen K. Shivamoggi, *Kluwer Academic Publishers* (37, 3, p. 407); reviewed by John L. Lumley.

Finite Element Analysis for Composite Structures, by L. T. Tenek and J. Argyris, *Kluwer Academic Publishers* (37, 4, p. 527); reviewed by Robert L. Sierakowski.

Impact on Composite Structures, by S. Abrate, *Cambridge University Press* (37, 4, p. 527); reviewed by Anthony N. Palazotto.

Dynamics of Multibody Systems, Second Edition, by Ahmed A. Shabana, *Cambridge University Press* (37, 5, p. 663); reviewed by Peretz P. Friedman.

Vortices and Heat Transfer, edited by M. Fiebig and N. K. Mitra, *Verlag Vieweg* (37, 5, p. 664); reviewed by Peter Bradshaw.

Optimum Aerodynamic Design & Parallel Navier–Stokes Computations, edited by J. Periaux, G. Bugeda, P. K. Chaviaropoulos, K. Giannakoglou, S. Lanteri, and B. Mantel, *Verlag Vieweg* (37, 6, p. 782); reviewed by Oktay Baysal.

Stress Analysis of Fiber-Reinforced Composite Materials, by M. W. Hyer, *WCB/McGraw–Hill* (37, 6, p. 783); reviewed by J. N. Reddy.

Dynamics of Slender Votices, edited by E. Krause and K. Gertsen, *Kluwer Academic Publishers* (37, 7, p. 902); reviewed by Stanley A. Berger.

Propulsion Combustion: Fuels to Emissions, edited by G. D. Roy, *Taylor & Francis Publishers* (37, 7, p. 902); reviewed by Corin Segal.

Mechanics of Sandwich Structures, edited by A. Vautrin, *Kluwer Academic Publishers* (37, 8, p. 1022); reviewed by Robert L. Sierakowski.

Unsteady Aerodynamics and Aeroelasticity of Turbomachines, edited by T. H.. Fransson, *Kluwer Academic Publishers* (37, 8, p. 1023); reviewed by Max F. Platzer.

Design and Optimization of Laminated Composite Materials, by Zafer Gurdal, *Wiley* (37, 9, p. 1140); reviewed by Robert L. Sierakowski.

Turbulence Modeling for CFD, 2nd Edition, by David C. Wilcox, *DCW Industries* (37, 9, p. 1140); reviewed by Fotis Sotiropoulos.

Numerical Methods for Wave Propagation, edited by E. F. Toro and J. F. Clarke, *Kluwer Academic Publishers* (37, 10, p. 1334); reviewed by Randall J. LeVeque.

Fundamentals of Computational Fluid Dynamics, by Patrick J. Roache, *Hermosa Publishers* (37, 10, p. 1334); reviewed by Doyle Knight.

Low-Speed Wind Tunnel Testing, Third Edition, by Jewel B. Barlow, William H. Rae Jr., and Alan Pope, *Wiley* (37, 11, p. 1525); reviewed by R. L. Simpson.

Acoustics of Fluid–Structure Interactions, by M. S. Howe, *Cambridge University Press* (37, 11, p. 1526); reviewed by G. C. Lauchle and D. K. McLaughlin.

Computation and Comparison of Efficient Turbulent Models for Aeronautics: European Research Project ETMA, edited by A. Dervieux, M. Braza, and J.-P. Dussauge, *Verlag Vieweg* (37, 12, p. 1676); reviewed by M. Yousuff Hussaini.

Computational Gas Dynamics, by Culbert Laney, *Cambridge University Press* (37, 12, p. 1677); reviewed by Graham Candler.